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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,818	01/18/2006	Isao Sogo	2005_1938A	7412

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WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
HON, SOW FUN	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
03/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,818	SOGO ET AL.	
	Examiner	Art Unit	
	SOPHIE HON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 15-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 15-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/17/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/08 has been entered.

Response to Amendment

Withdrawn Rejections

New Rejections

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-12, 15-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hay (US 7,314,652) in view of Mitsunaga (JPO Website Machine English Translation of JP 2001-323149) and Hiraishi (US 2003/0156238 which is a direct English translation of WO 2002/0099474 A1).

Regarding claims 1-2, Hay teaches a direct backlight type liquid crystal device (back-lit LCD display, column 4, lines 59-65) comprising a backlight source 102 (column 5, lines 35-45), a light diffusion sheet (bottom diffuser film 114b, column 5, lines 41-51,

Fig. 3), a light ray adjusting film (BEF 108, column 5, lines 50-51, Fig. 3, brightness enhancement film BEF to direct light along a viewing axis, column 1, lines 30-40), and a liquid crystal panel (LCD 130, column 5, lines 15-20, Fig. 3), wherein the light diffusion sheet is formed from a composition comprising: (A) 93 to 96 wt% of aromatic polycarbonate resin (component A) (in the case of the bottom diffuser film, column 10, lines 14-20, aromatic polycarbonate, column 16, lines 55-65) which is within the claimed range of 80 to 99.995 wt%, and (B) 2 to 7 wt% of polymeric fine particles (component B) (bulk scattering additive, column 10, lines 15-20, polymer, column 10, lines 25-27) which is within the claimed range of 0.005 to 20 wt.%, having an average particle diameter of 3 to 10 μm (column 10, lines 4-8) which is within the claimed range of 0.01 to 50 μm, or 0.1 to 10 μm, and (D) 0.01 to 1 wt.% of ultraviolet absorber (component D) (column 17, lines 5-10) which overlaps the claimed range of 0 to 0.5 parts by weight, and (F) does not teach any hindered phenol compound, which meets the claimed limitation of less than 0.001 parts by weight of hindered phenol compound (component F) based on 100 parts by weight of the components A and B. Hay fails to teach (C) 0.001 to 5 parts by weight of at least one heat stabilizer selected from the group consisting of a phosphate compound (component C-1) and a phosphite compound (C-2), and (E) 0.0001 to 3 parts by weight of fluorescent whitening agent (component E).

However, Hay teaches that minor levels of heat stabilizer and colorant can be added (column 15, lines 55-65) and that whiteness is desirable (white, column 19, lines 15-20).

Mitsunaga teaches a light diffusion sheet (light diffusible, [0001], sheet, [0080]) which is formed from a composition comprising: (A) 80 to 99.995 wt. % of aromatic polycarbonate resin (component A) (abstract), (B) 0.005 to 20 wt. % polymeric fine particles (component B) (abstract) having an average particle diameter of 0.1 to 8 μm ([0047]), (D) 0.01 parts by weight of ultraviolet absorber (component D) (ultraviolet ray absorbent (I ingredient), [0072]); and further comprising: (C) 0.0001 to 1.0 parts by weight of at least one member selected from the group consisting of a phosphate compound (component C-1) (a component D, abstract), a phosphite compound (component C-2) (a component E, abstract) which are inherently heat stabilizers as is well known in the art, and (E) 0 to 0.5 parts by weight of fluorescent whitening agent (component E) (a component G, abstract) for the purpose of providing the desired heat stability and whiteness.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have added (C) 0.001 to 5 parts by weight of at least one heat stabilizer selected from the group consisting of a phosphate compound (component C-1) and a phosphite compound (C-2), as the heat stabilizer, and (E) 0.0001 to 3 parts by weight of fluorescent whitening agent (component E), as the white colorant, to the composition of the light diffusion sheet of Hay, in order to obtain the desired heat stability and whiteness, as taught by Mitsunaga.

In addition, Hay fails to teach that the light diffusion sheet has a protective film on a surface thereof which faces the backlight source, wherein the protective sheet is an

organic polymer film containing 0.1 to 50 wt.% of ultraviolet absorber (component D^p) and has a thickness of 0.1 to 500 μm.

However, Hiraishi teaches that a light diffusion sheet has a protective film on a surface thereof (transparent layer laminated on at least one surface of the light-diffusing layer, [0029), which faces the backlight source (light-diffusing film disposed on a light-emitting side of a plane light source unit, disposed on the backside of the display unit, [0029]), for the purpose of providing the desired ultraviolet protection from the light source (arrangement of the transparent layer on a light emitting surface of a plane light source realizes effective protection of the light-diffusing layer and more stable inhibition of ultraviolet leakage [0025],), wherein the protective film is an organic polymer film containing 0.1 to 10 wt% of ultraviolet absorber (component D^p) ([0110]), which is within the claimed range of 0.1 to 50 wt.%, and having a thickness of 3 to 150 μm (transparent resin layer, [0117]), which is within the claimed range of 0.1 to 500 μm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a protective film on a surface of the light diffusion sheet which faces the backlight source in the direct backlight type liquid crystal device of Hay, wherein the protective sheet is an organic polymer film containing an amount within the range of 0.1 to 50 wt.% of ultraviolet absorber (component D^p) and has a thickness that is within the range of 0.1 to 500 μm, in order to obtain improved ultraviolet protection from the light source, as taught by Hiraishi.

Regarding claim 3, Hay teaches that the absolute value of the difference between the refractive index of the polymeric fine particles (component B) and the

refractive index of the aromatic polycarbonate resin (component A) is 0.1 (column 9, lines 58-62, aromatic polycarbonate, column 16, lines 55-65) which is within the claimed range of 0.02 to 0.3.

Regarding claim 4, Hay teaches that the polymeric fine particles (component B) can be acryl particles (column 9, lines 15-20), but fails to disclose that they are cross-linked.

However, acryl fine particles that are cross-linked have better dimensional stability and are commonly used in light diffusion sheets, as evidenced by Hiraishi.

Hiraishi teaches that crosslinked acryl fine particles are used for the purpose of providing the desired light diffusion (dispersed phase, light-scattering factor, [0073]) in a light diffusion sheet (In light-diffusing film, dispersed phase particles, [0053]).

Regarding claim 5, Mitsunaga teaches that the heat stabilizer (component C) can be a pentaerythritol diphosphite compound (component C-2) represented by general formula (2-1) of Applicant (formula (4), [0018]), for the purpose of providing the desired heat stabilization.

Regarding claim 6, Mitsunaga teaches that the heat stabilizer (component C) can be trimethyl phosphate ([0062]), for the purpose of providing the desired heat stabilization.

Regarding claim 7, Mitsunaga teaches that the heat stabilizer (component C) can be distearyl pentaerythritol diphosphite ([0064]), for the purpose of providing the desired heat stabilization.

Regarding claim 8, Mitsunaga teaches that the heat stabilizer (component C) can comprise both trimethyl phosphate ([0062]) and distearyl pentaerythritol diphosphite ([0064], a trialkylphosphate and a pentaerythritol diphosphite, abstract), for the purpose of providing the desired heat stabilization.

Regarding claim 9, Mitsunaga teaches that the stabilizer (component C) (phosphorus compounds (C ingredient), more than a kind, [0011]) can comprise distearyl pentaerythritol diphosphite (component C-2) ([0064]), a pentaerythritol diphosphite compound (component C-2) represented by general formula (2-2) of Applicant (formula (3), [0016]), where $Ar^3 = Ar^2$ of Applicant; and additionally a phosphonite compound (component C-3) represented by general formula (3-1) (formula (1), [0012-0013]), where $Ar^1 = Ar^3$ of Applicant, for the purpose of providing the desired heat stabilization.

Regarding claim 10, Mitsunaga teaches that the heat stabilizer (component C) comprises a phosphite compound (component C-2) represented by general formula (2-2) of Applicant (formula (3), [0016]), where $Ar^3 = Ar^2$ of Applicant, and additionally a phosphonite compound (component C-3) represented by general formula (3-1) (formula (1), [0012-0013]), where $Ar^1 = Ar^3$ of Applicant, for the purpose of providing the desired heat stabilization.

Regarding claim 11, Hay teaches a specific thickness of the light diffusion sheet of 0.5 mm (column 9, lines 29-31).

Regarding claim 12, Hay teaches that the ultraviolet absorber (component D) is at least one ultraviolet absorber selected from a benzophenone based ultraviolet

absorber (column 17, lines 15-20) and a benzotriazole based ultraviolet absorber (column 17, lines 36-40).

Regarding claim 15, Hiraishi teaches that the organic polymer of the protective film is an acrylic resin, a polycarbonate resin, a polyester resin (above exemplified resins, [0116], resin for constituting the continuous phase, [0060]), or a polyethylene resin ([0061]), for the purpose of providing the desired heat resistance and transparency ([0116]).

Regarding claim 16, Hiraishi teaches that the ultraviolet absorber (component D^p) is at least one selected from the group consisting of a benzophenone based ultraviolet absorber and a benzotriazole based ultraviolet absorber ([0108]), for the purpose of providing the desired protection (prevent deterioration, abstract).

Regarding claim 17, Mitsunaga teaches that the fluorescent whitening agent (component E) is a benzoxazole based fluorescent whitening agent and/or a coumarin based fluorescent whitening agent ([0067]), for the purpose of providing the desired whitening.

Regarding claims 18-19, Hay teaches a light diffusion sheet (bottom diffuser film 114b, column 5, lines 41-51, Fig. 3) for a direct backlight (column 4, lines 59-65) wherein the sheet is formed from a composition comprising: A) 93 to 96 wt% of aromatic polycarbonate resin (component A) (in the case of the bottom diffuser film, column 10, lines 14-20, aromatic polycarbonate, column 16, lines 55-65) which is within the claimed range of 80 to 99.995 wt%, and (B) 2 to 7 wt% of polymeric fine particles (component B) (bulk scattering additive, column 10, lines 15-20, polymer, column 10, lines 25-27)

which is within the claimed range of 0.005 to 20 wt.%, having an average particle diameter of 3 to 10 μm (column 10, lines 4-8) which is within the claimed range of 0.01 to 50 μm, or 0.1 to 10 μm, and (D) 0.01 to 1 wt.% of ultraviolet absorber (component D) (column 17, lines 5-10) which overlaps the claimed range of 0 to 0.5 parts by weight, and (F) does not teach any hindered phenol compound, which meets the claimed limitation of less than 0.001 parts by weight of hindered phenol compound (component F) based on 100 parts by weight of A and B. Hay fails to teach (C) 0.001 to 5 parts by weight of at least one heat stabilizer selected from the group consisting of a phosphate compound (component C-1) and a phosphite compound (C-2), and (E) 0.0001 to 3 parts by weight of fluorescent whitening agent (component E).

However, Hay teaches that minor levels of heat stabilizer and colorant can be added (column 15, lines 55-65) and that whiteness is desirable (white, column 19, lines 15-20).

Mitsunaga teaches a light diffusion sheet (light diffusible, [0001], sheet, [0080]) which is formed from a composition comprising: (A) 80 to 99.995 wt. % of aromatic polycarbonate resin (component A) (abstract), (B) 0.005 to 20 wt. % polymeric fine particles (component B) (abstract) having an average particle diameter of 0.1 to 8 μm ([0047]), (D) 0.01 parts by weight of ultraviolet absorber (component D) (ultraviolet ray absorbent (I ingredient), [0072]); and further comprising (C) 0.0001 to 1.0 parts by weight of at least one member selected from the group consisting of a phosphate compound (component C-1) (a component D, abstract), a phosphite compound (component C-2) (a component E, abstract) which are inherently heat stabilizers as is

well known in the art, and (E) 0 to 0.5 parts by weight of fluorescent whitening agent (component E) (a component G, abstract) for the purpose of providing the desired heat stability and whiteness.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have added (C) 0.001 to 5 parts by weight of at least one heat stabilizer selected from the group consisting of a phosphate compound (component C-1) and a phosphite compound (C-2), as the heat stabilizer, and (E) 0.0001 to 3 parts by weight of fluorescent whitening agent (component E), as the white colorant, to the composition of the light diffusion sheet of Hay, in order to obtain the desired heat stability and whiteness, as taught by Mitsunaga.

In addition, Hay fails to teach that the light diffusion sheet has a protective film which is an organic polymer film containing 0.1 to 50 wt.% of ultraviolet absorber (component D^p) and has a thickness of 0.1 to 500 μm.

However, Hiraishi teaches that a light diffusion sheet has a protective film on a surface thereof (transparent layer laminated on at least one surface of the light-diffusing layer, [0029), which faces a backlight source (light-diffusing film disposed on a light-emitting side of a plane light source unit, disposed on the backside of the display unit, [0029]), for the purpose of providing the desired ultraviolet protection from the light source (arrangement of the transparent layer on a light emitting surface of a plane light source realizes effective protection of the light-diffusing layer and more stable inhibition of ultraviolet leakage [0025],), wherein the protective film is an organic polymer film containing 0.1 to 10 wt% of ultraviolet absorber (component D^p) ([0110]), which is within

the claimed range of 0.1 to 50 wt.%, and has a thickness of 3 to 150 μm (transparent resin layer, [0117]), which is within the claimed range of 0.1 to 500 μm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a protective film on a surface of the light diffusion sheet that faces the direct backlight of Hay, wherein the protective sheet is an organic polymer film containing an amount within the range of 0.1 to 50 wt.% of ultraviolet absorber (component D^p) and has a thickness that is within the range of 0.1 to 500 μm, in order to obtain improved ultraviolet protection from the light source, as taught by Hiraishi.

Regarding claim 20, Hay teaches that the absolute value of the difference between the refractive index of the polymeric fine particles (component B) and the refractive index of the aromatic polycarbonate resin (component A) is 0.1 (column 9, lines 58-62, aromatic polycarbonate, column 16, lines 55-65) which is within the claimed range of 0.02 to 0.3.

Regarding claim 21, Hay teaches that the polymeric fine particles (component B) can be acryl particles (column 9, lines 15-20), but fails to disclose that they are cross-linked.

However, acryl fine particles that are cross-linked have better dimensional stability and are commonly used in light diffusion sheets, as evidenced by Hiraishi.

Hiraishi teaches that crosslinked acryl fine particles are used for the purpose of providing the desired light diffusion (dispersed phase, light-scattering factor, [0073]) in a light diffusion sheet (In light-diffusing film, dispersed phase particles, [0053]).

Regarding claim 22, Mitsunaga teaches that the heat stabilizer (component C) can be a pentaerythritol diphosphite compound (component C-2) represented by general formula (2-1) of Applicant (formula (4), [0018]), for the purpose of providing the desired heat stabilization.

Regarding claim 23, Mitsunaga teaches that the heat stabilizer (component C) can be trimethyl phosphate ([0062]), for the purpose of providing the desired heat stabilization.

Regarding claim 24, Mitsunaga teaches that the heat stabilizer (component C) can be distearyl pentaerythritol diphosphite ([0064]), for the purpose of providing the desired heat stabilization.

Regarding claim 25, Mitsunaga teaches that the heat stabilizer (component C) can comprise both trimethyl phosphate ([0062]) and distearyl pentaerythritol diphosphite ([0064], a trialkylphosphate and a pentaerythritol diphosphite, abstract), for the purpose of providing the desired heat stabilization.

Regarding claim 26, Mitsunaga teaches that the stabilizer (component C) (phosphorus compounds (C ingredient), more than a kind, [0011]) can comprise distearyl pentaerythritol diphosphite (component C-2) ([0064]), a pentaerythritol diphosphite compound (component C-2) represented by general formula (2-2) of Applicant (formula (3), [0016]), where Ar^3 = Ar^2 of Applicant, and a phosphonite compound (component C-3) represented by general formula (3-1) (formula (1), [0012-0013]), where Ar^1 = Ar^3 of Applicant, for the purpose of providing the desired heat stabilization.

Regarding claim 27, Mitsunaga teaches that the heat stabilizer (component C) comprises a phosphite compound (component C-2) represented by general formula (2-2) of Applicant (formula (3), [0016]), where $Ar^3 = Ar^2$ of Applicant, and additionally a phosphonite compound (component C-3) represented by general formula (3-1) (formula (1), [0012-0013]), where $Ar^1 = Ar^3$ of Applicant, for the purpose of providing the desired heat stabilization.

Regarding claim 28, Hay teaches that the ultraviolet absorber (component D) is at least one ultraviolet absorber selected from a benzophenone based ultraviolet absorber (column 17, lines 15-20) and a benzotriazole based ultraviolet absorber (column 17, lines 36-40).

Regarding claim 29, Hay teaches a specific thickness of the light diffusion sheet of 0.5 mm (column 9, lines 29-31).

Regarding claim 30, Mitsunaga teaches that the fluorescent whitening agent (component E) is a benzoxazole based fluorescent whitening agent and/or a coumarin based fluorescent whitening agent ([0067]), for the purpose of providing the desired whitening.

Regarding claims 31-32, Hay teaches that the light diffusion sheet is formed from a composition comprising 0.01 to 1 wt.% of ultraviolet absorber (component D) (column 17, lines 5-10) which overlaps the claimed range of 0 to 0.5 parts by weight based on 100 parts by weight of the total of the components A and B.

Response to Arguments

3. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks, can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sophie Hon/

Sow-Fun Hon

Examiner, Art Unit 1794